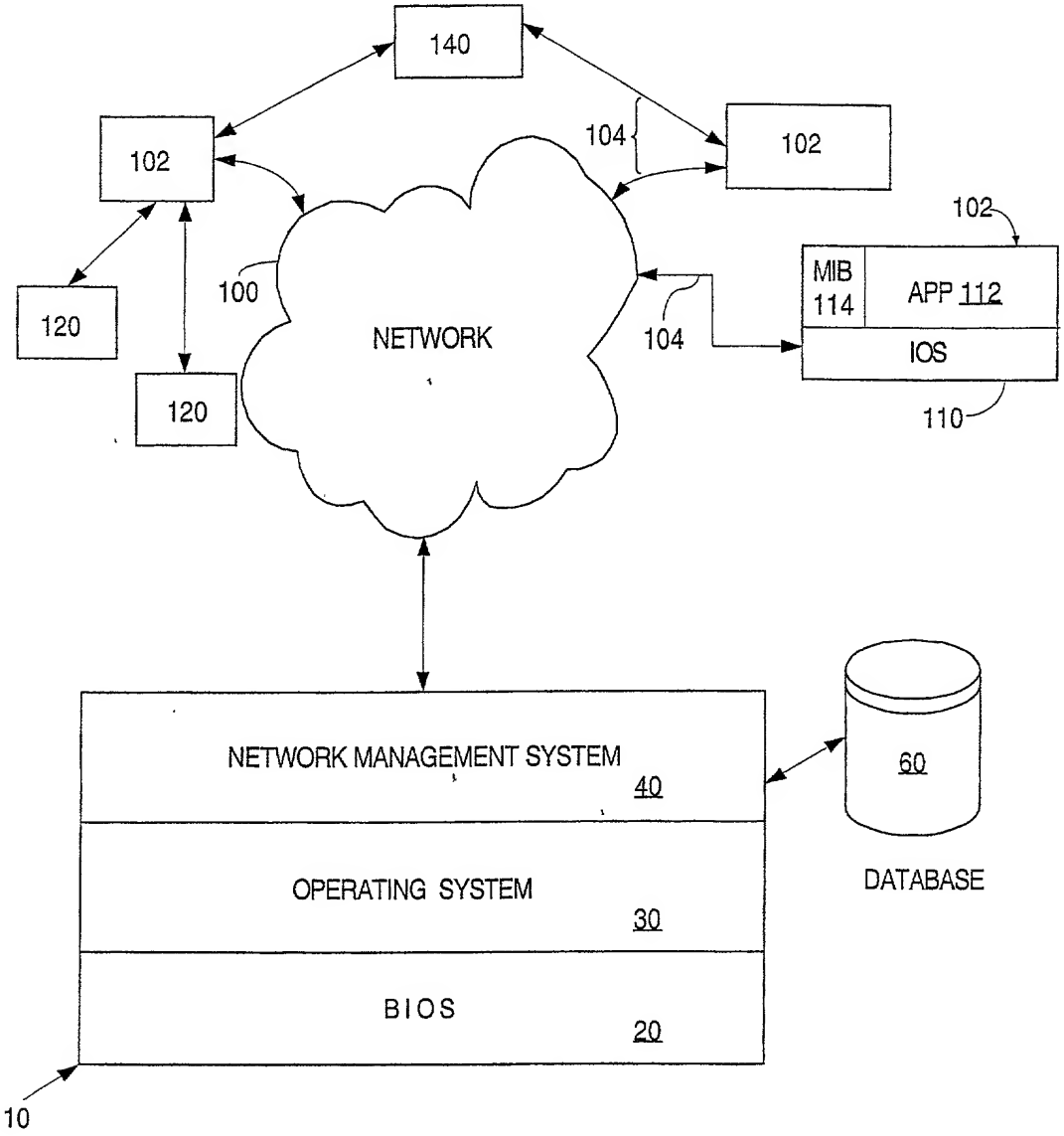
140
102
104
102
102
MIB 114
APP 112
IOS
110
100
NETWORK
104
120
120
NETWORK MANAGEMENT SYSTEM
40
60
DATABASE
OPERATING SYSTEM
30
BIOS
20
10

FIG. 1

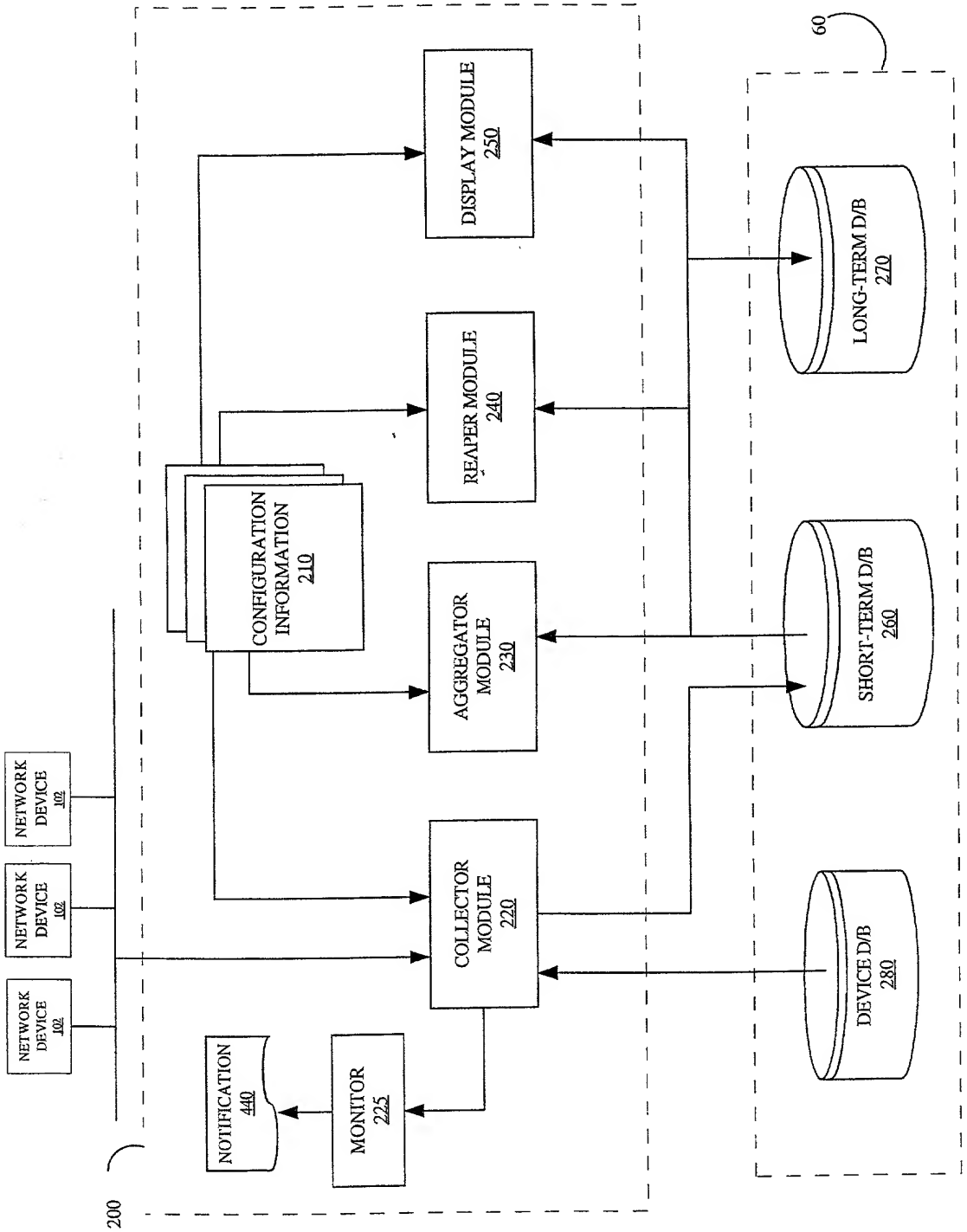

FIG. 2

20020195-0325-0633

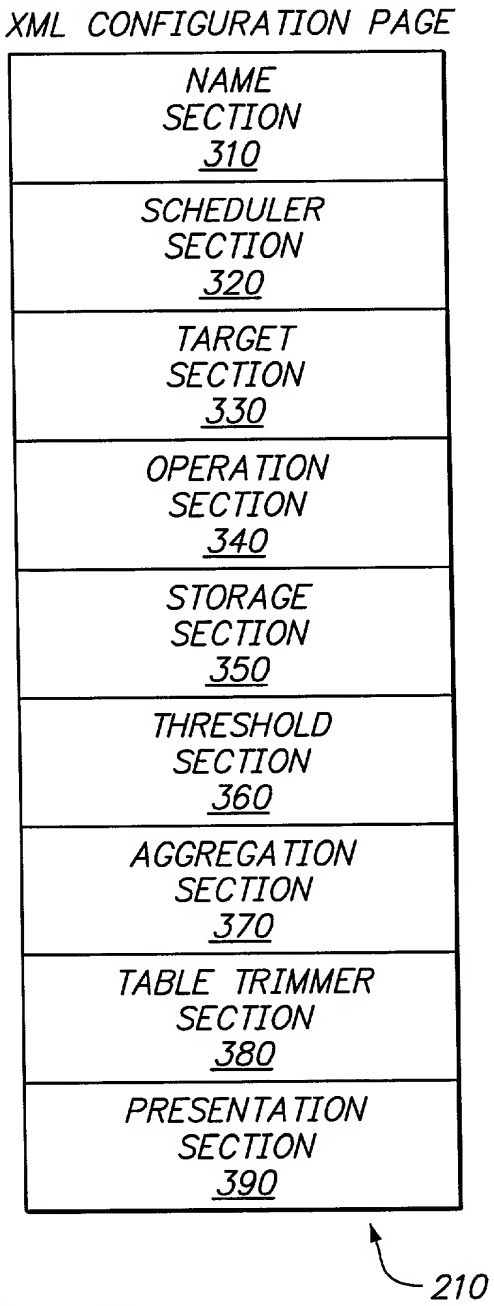

FIG. 3A

50325-0633

```
<!ELEMENT Collector (Schedule, InputBlock) >
<!ELEMENT Schedule (Poll?) >
<!ELEMENT Poll (EMPTY) >
<!ELEMENT InputBlock (QueryBlock) >
<!ELEMENT QueryBlock (Query, ForEachRow) >
<!ELEMENT Query (ModelQuery | SnmpQuerySet) >
<!ELEMENT ModelQuery (#PCDATA) >
<!ELEMENT SnmpQuerySet (SnmpQuery+) >
<!ELEMENT SnmpQuery (SnmpVariable+) >
<!ELEMENT SnmpVariable (EMPTY) >
<!ELEMENT ForEachRow (QueryBlock | OutputBlock) >
<!ELEMENT OutputBlock (Column*, Threshold*) >
<!ELEMENT Column (Formula) >
<!ELEMENT Formula (SimpleFormula | ArithmeticFormula) >
<!ELEMENT SimpleFormula (EMPTY) >
<!ELEMENT ArithmeticFormula (#PCDATA) >
<!ELEMENT Threshold (ArithmeticFormula, Notification) >
<!ELEMENT Notification (#PCDATA) >
<!ATTLIST Collector name CDATA #REQUIRED >
<!ATTLIST Collector version CDATA #REQUIRED >
<!ATTLIST Poll frequency CDATA #REQUIRED >
<!ATTLIST SnmpQuery ipVariable CDATA #REQUIRED >
<!ATTLIST SnmpQuery operation (GET|GETTABLE) #REQUIRED >
<!ATTLIST SnmpQuery instance CDATA #REQUIRED >
<!ATTLIST SnmpVariable name CDATA #REQUIRED >
<!ATTLIST SnmpVariable oid CDATA #REQUIRED >
<!ATTLIST SnmpVariable type
(OID|INT32|UINT32|TIMETICKS|COUNTER32|COUNTER64|GAUGE32|IPADDR
ESS|OCTETSTRING) #REQUIRED >
<!ATTLIST Column name CDATA #REQUIRED >
<!ATTLIST Column description CDATA #IMPLIED >
<!ATTLIST Column type (BOOL | INT8 | INT32 | INT64 | STRING |
FLOAT | DOUBLE ) #REQUIRED >
<!ATTLIST Column size CDATA #IMPLIED >
<!ATTLIST Column isKey (YES|NO) "NO" >
<!ATTLIST SimpleFormula variableName CDATA #REQUIRED >
```

50325-0633

FIG 3B

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<!DOCTYPE Collector SYSTEM "CscoHsaCollectorConfig.dtd" >
311 <Collector name="Router Host Information" version="1.0">
    <Schedule>
321     <Poll frequency="60000" />
    </Schedule>
    <InputBlock>
        <QueryBlock>
            <Query>
              <ModelQuery>select Name, SysName, ProductType,
331 ManagementIPAddress from Cisco_ManagedNetworkElement where
ProductFamily="Router"</ModelQuery>
            </Query>
            <ForEachRow>
                <QueryBlock>
                    <Query>
                        <SnmpQuerySet>
                            <SnmpQuery ipVariable="ManagementIPAddress"
332 operation="GET" instance="0" >
                                <SnmpVariable name="SysUpTime"
oid="sysUpTime" type="TIMETICKS" />
                                <SnmpVariable name="CPU1Minute"
341 oid="avgBusy1" type="INT32" />
                                <SnmpVariable name="CPU5Minute"
oid="avgBusy5" type="INT32" />
                            </SnmpQuery>
                        </SnmpQuerySet>
                    </Query>
                <ForEachRow>
                    <OutputBlock>
                        <Column name="DeviceDbId" type="INT32" isKey="YES"
>
                            <Formula>
                                <SimpleFormula name="Name" />
                            </Formula>
351                     </Column>
                        <Column name="HostName" type="STRING" size="1024">
                            <Formula>
                              <SimpleFormula name="SysName" />
                            </Formula>
                        </Column>
                        <Column name="IPAddress" type="STRING" size="15" >
                          <Formula>
```

FIG 3C

```
                    <SimpleFormula name="ManagementIPAddress" />
                  </Formula>
                </Column>
                <Column name="ProductType" type="STRING" size="256"
>
                  <Formula>
                    <SimpleFormula name="ProductType" />
                  </Formula>
                </Column>
                <Column name="SysUpTime" type="INT64" >
                  <Formula>
                      <SimpleFormula name="SysUpTime" />
                  </Formula>
                </Column>
                <Column name="CPU1Minute" type="INT32" >
                  <Formula>
                    <SimpleFormula name="CPU1Minute" />
                  </Formula>
                </Column>
                <Column name="CPU5Minute" type="INT32" >
                  <Formula>
                    <SimpleFormula name="CPU5Minute" />
                  </Formula>
                  </Column>
                <Threshold>
                    <ArithmeticFormula>CPU5Minute &gt;= 90
&amp;amp; CPU5Minute.Previous &lt; 90</ArithmeticFormula>
                    <Notification>Router $HostName$ CPU
utilization exceeded 90%</Notification>
                </Threshold>
            </OutputBlock>
        </ForEachRow>
    </QueryBlock>
  </ForEachRow>
 </QueryBlock>
</InputBlock>
</Collector>
```

351

361

362

10075960-062302

FIG 3C
(continued)

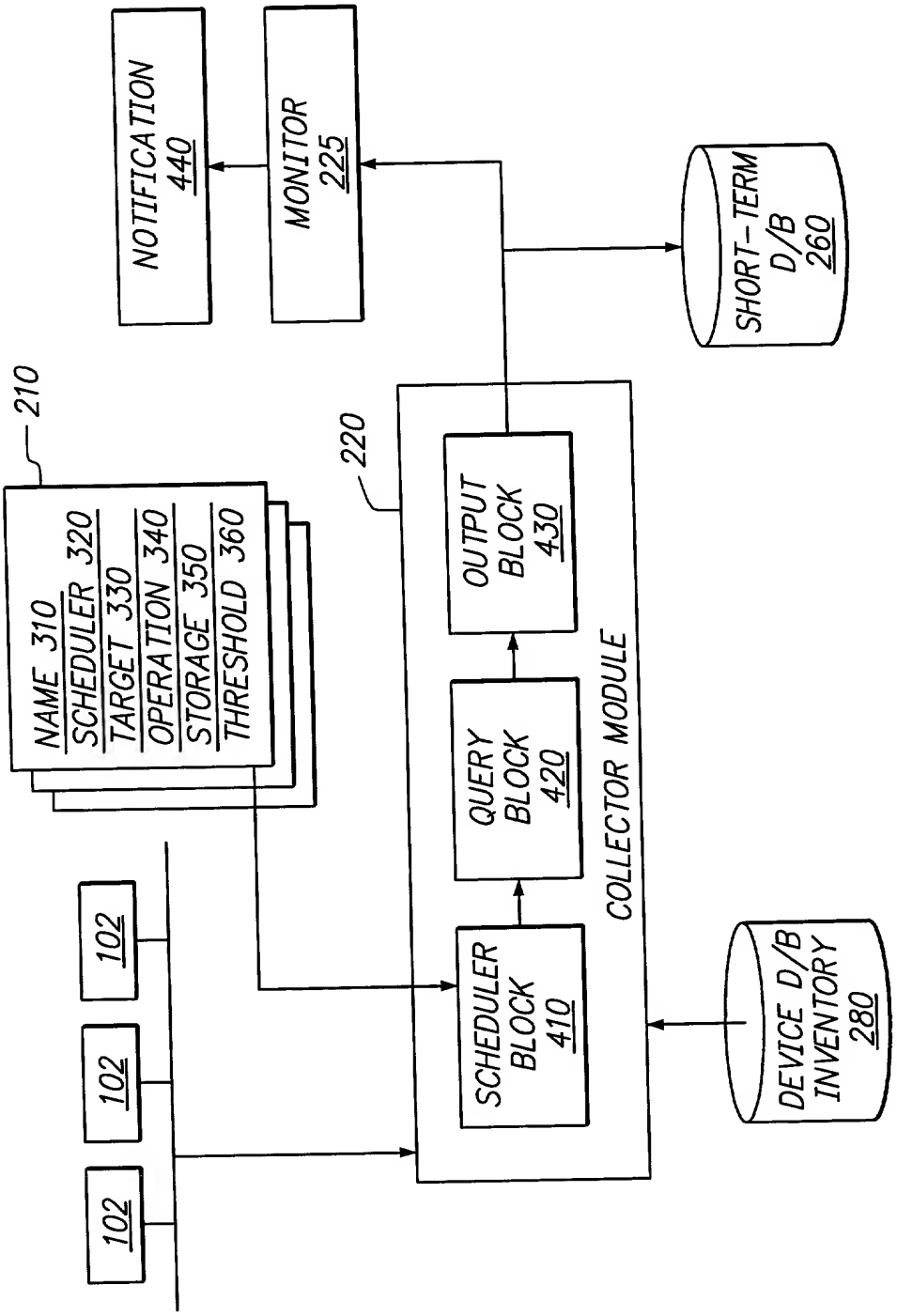
NOTIFICATION 440
MONITOR 225
SHORT-TERM D/B 260
210
NAME 310
SCHEDULER 320
TARGET 330
OPERATION 340
STORAGE 350
THRESHOLD 360
220
OUTPUT BLOCK 430
QUERY BLOCK 420
SCHEDULER BLOCK 410
COLLECTOR MODULE
DEVICE D/B INVENTORY 280
102
102
102

FIG. 4

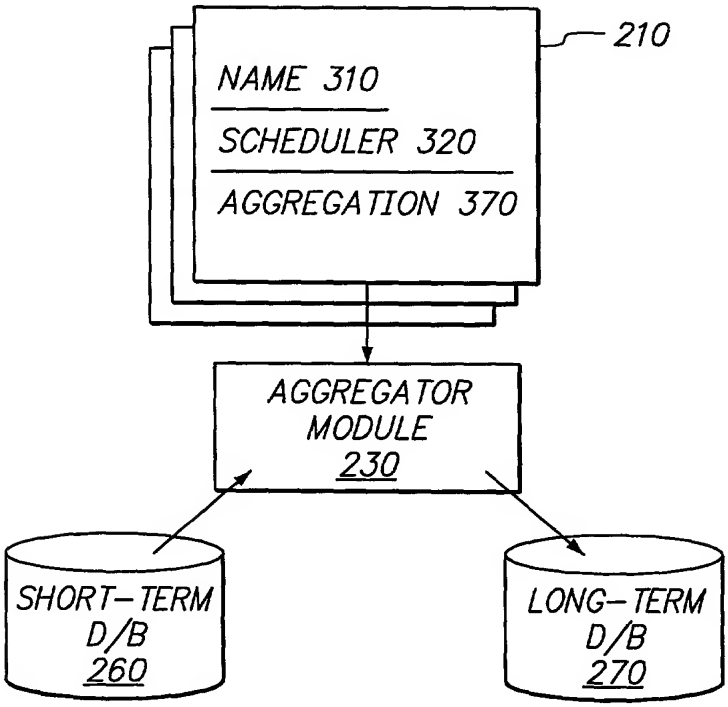

FIG. 5

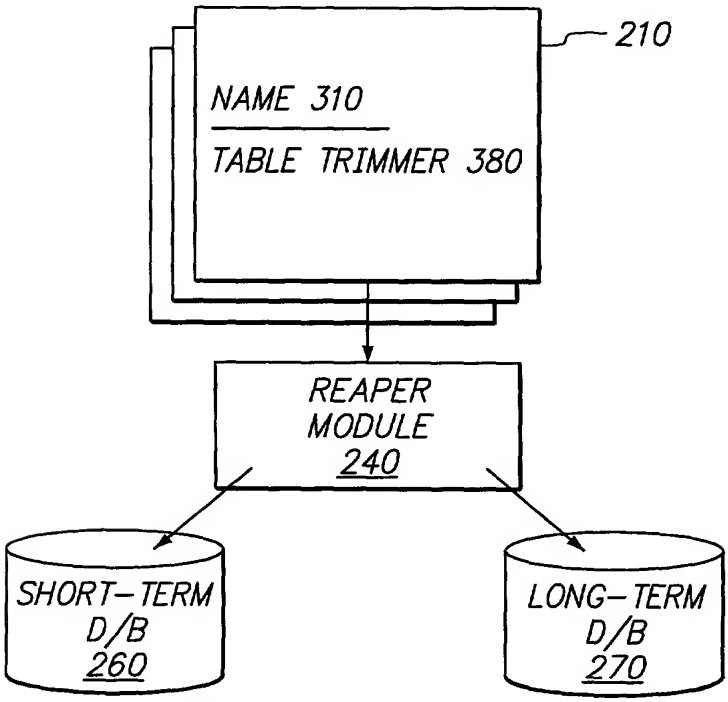

FIG. 6

10025960.020202

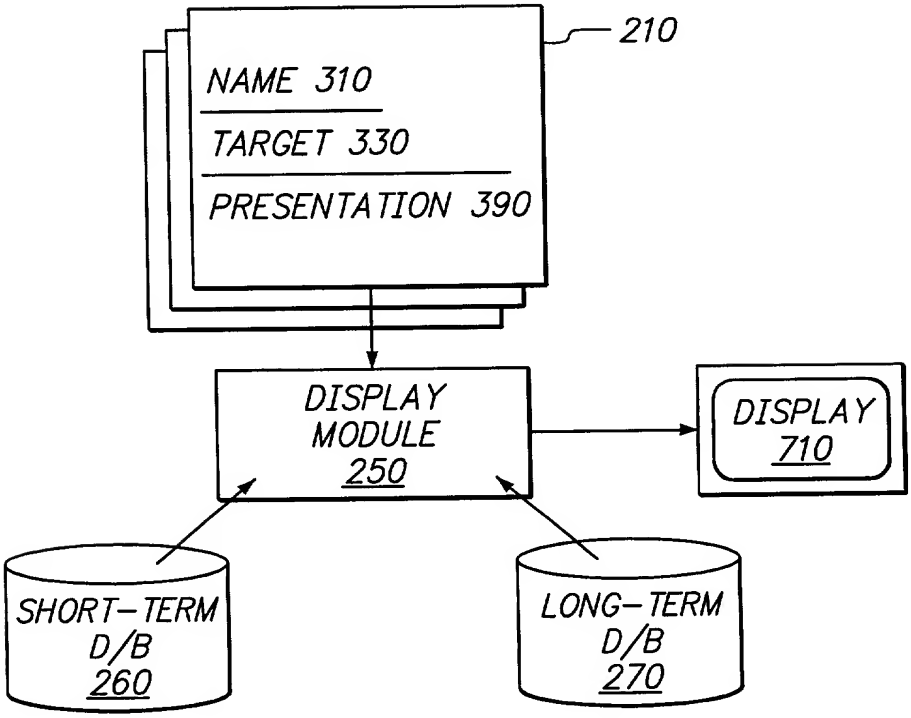

FIG. 7

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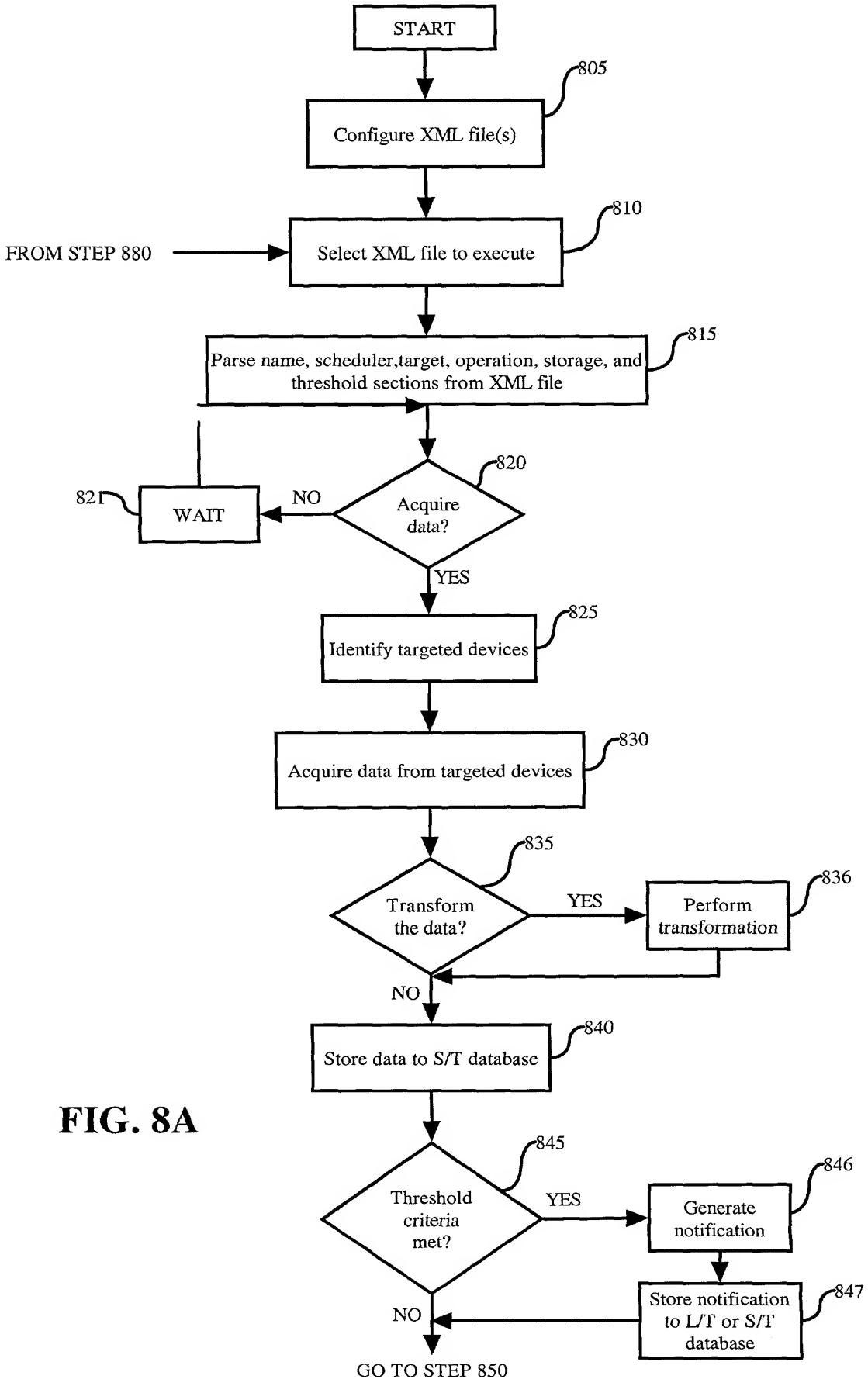

FIG. 8A

EL734779978US

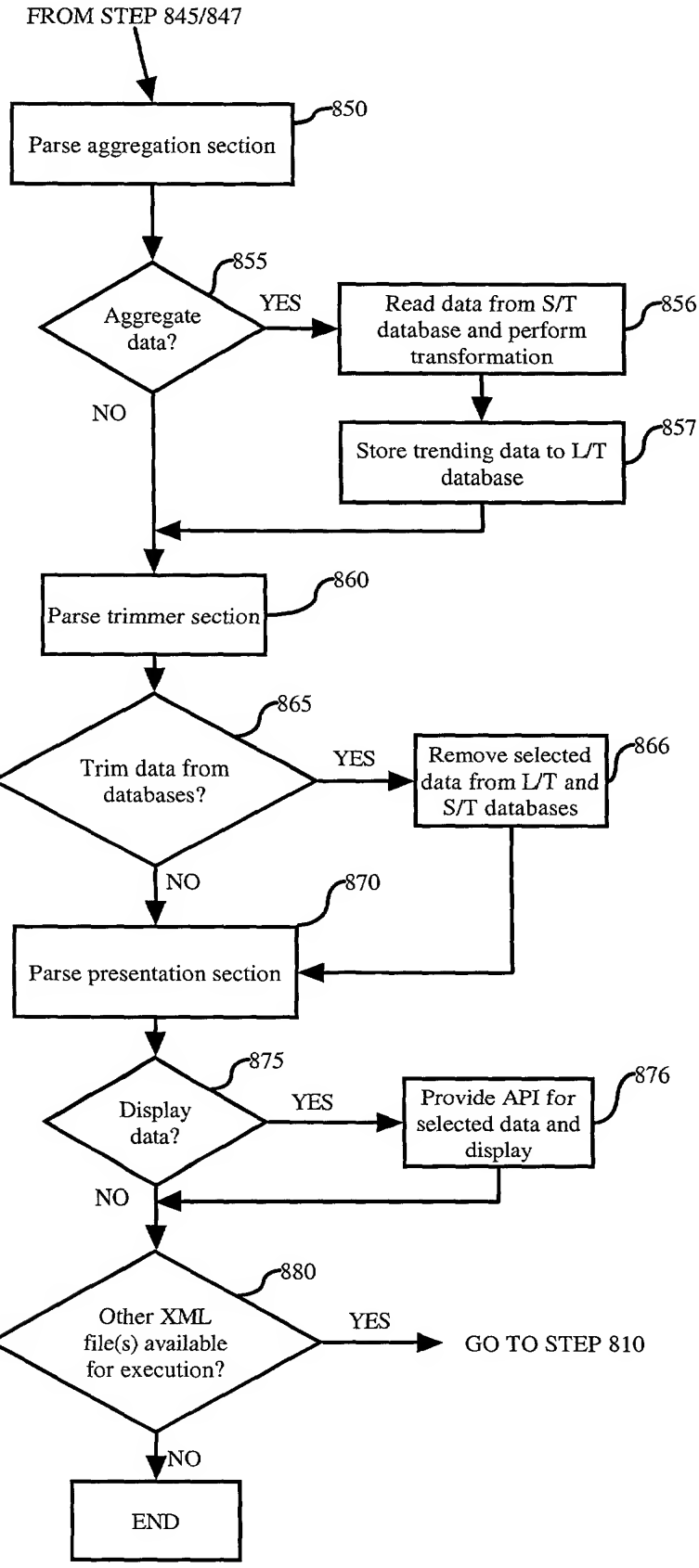
FROM STEP 845/847
Parse aggregation section
850
Aggregate data?
855
YES
Read data from S/T database and perform transformation
856
NO
Store trending data to L/T database
857
Parse trimmer section
860
Trim data from databases?
865
YES
Remove selected data from L/T and S/T databases
866
NO
Parse presentation section
870
Display data?
875
YES
Provide API for selected data and display
876
NO
Other XML file(s) available for execution?
880
YES
GO TO STEP 810
NO
END

FIG. 8B

DETAILED DESCRIPTION

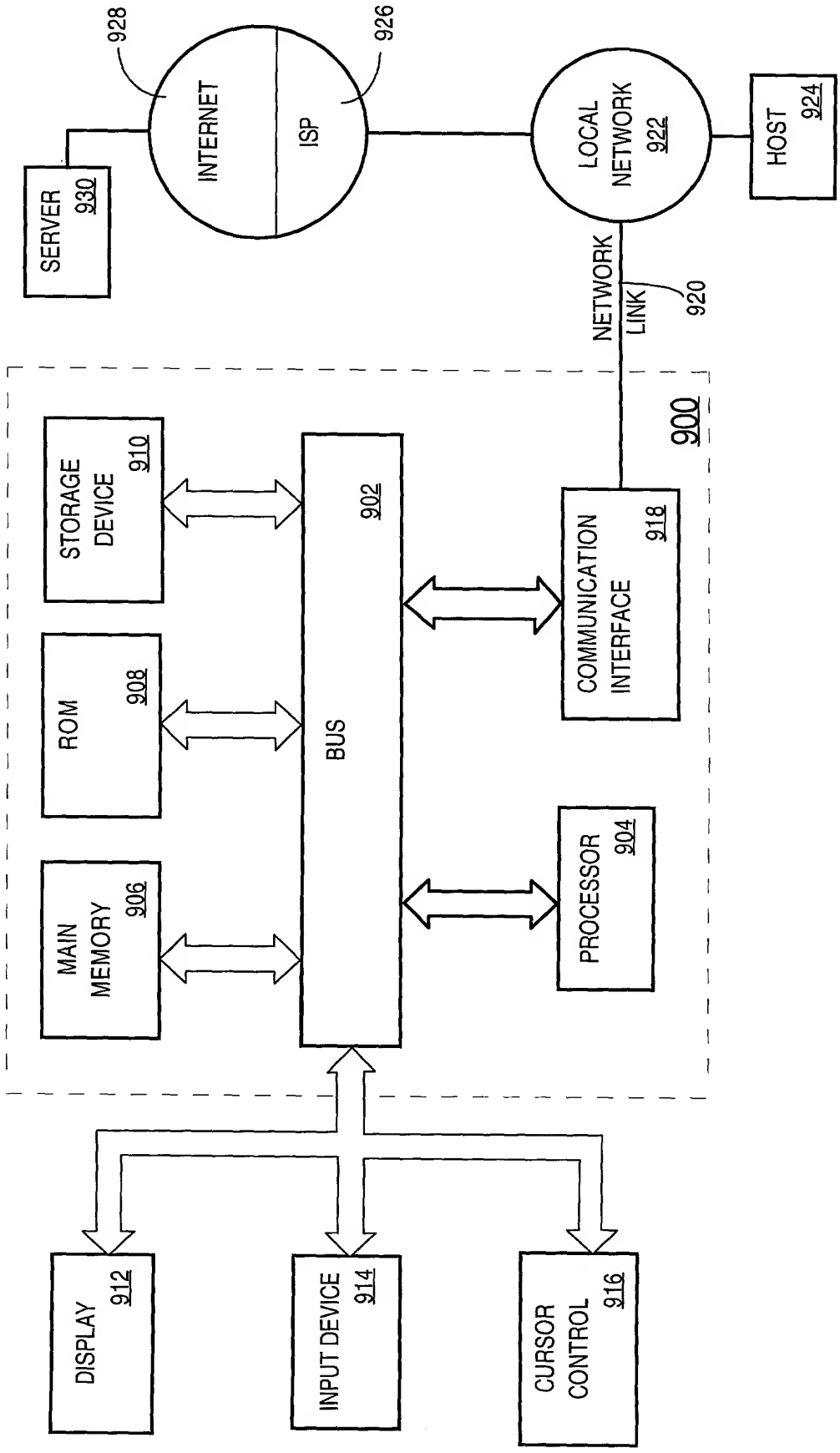

FIG. 9